REMARKS

Claims 1-13 are pending in the application. Reconsideration and allowance are respectfully requested in view of the following remarks.

Telephone Conference

During the telephone conference between Examiner Kastler and Applicants' undersigned representative on March 27, 2006, Examiner Kastler indicated that the Request for Reconsideration filed on March 20, 2006, was received by the Office, but the Office has no record of the Declaration by Alexander Schnell Under 37 C.F.R. § 1.132, which is discussed in the Request for Reconsideration. To ensure consideration of the Declaration by the Office, a copy of the Declaration is attached.

Obviousness-Type Double Patenting

Claims 1-13 stand rejected under the doctrine of obviousness-type double patenting over claims 1-13 of U.S. Application No. 10/726,608 for the reasons stated at pages 2-3 of the Office Action.

Applicants will reconsider the propriety of this rejection, as well as the submission of a Terminal Disclaimer to obviate the rejection, once the Office indicates allowable subject matter in this application.

Rejection Under 35 U.S.C. § 103

Claims 1-13 stand rejected under 35 U.S.C. § 103(a) over over G. Antonelli, "Non-Destructive Condition Assessment of Serviced MCrAlY Coatings" ("Antonelli") or G. Antonelli et al., "Qualification of a Frequency Scanning Eddy Current

Equipment for Nondestructive Characterization of new and Serviced High-Temperature Coatings" ("Antonelli et al.") in view of "admitted prior art of the instant disclosure" ("APA"). The reasons for the rejection are stated on pages 3-4 of the Office Action. The rejection is respectfully traversed.

Claim 1 recites "a method of determining the depletion of Al and Cr of a γ/γ' MCrAlY-coating of a component after use in a high temperature environment, the method comprising: (a) using a component having a γ/γ' MCrAlY-coating in a high-temperature environment in which the γ/γ' MCrAlY-coating exhibits an equilibrium γ/γ'-microstructure, (b) cooling the component to a temperature lower than the operation temperature such that the γ/γ' MCrAlY-coating exhibits a non-equilibrium γ/γ'-microstructure at room temperature, (c) applying a defined annealing heat treatment to the γ/γ' MCrAlY-coated component to transform the non-equilibrium high temperature γ/γ'-microstructure into the equilibrium room temperature microstructure with a α-Cr phase, (d) measuring qualitatively impedance curves or the electrical conductivity and magnetic permeability of the MCrAlY-coating by means of a multi-frequency eddy current system, and (e) determining the Al and/or Cr depletion of the coating from the measured impedance curves or coating conductivity and permeability" (emphasis added). Applicants respectfully submit that the claimed method is not suggested by the applied combination of references.

As was discussed in the Amendment filed on November 18, 2005, the inventors unexpectedly determined that the method recited in claim 1 enables improved NDT coating assessment. Applicants determined that by subjecting a component including an applied γ/γ' MCrAlY-coating to the defined annealing heat treatment recited at clause (c) in claim 1 (to transform the non-equilibrium high

temperature γ/γ'-microstructure into the equilibrium room temperature microstructure with a α-Cr phase) after using the component in a high temperature environment, i.e., in a post-service condition of the coating, after performing steps (a) and (b) and before performing step (d), a non-destructive testing method can be used to determine Al and/or Cr depletion within the γ/γ' MCrAlY-coating in an improved manner.

The Office Action acknowledges that Antonelli and Antonelli et al. both fail to suggest the use of the claimed defined annealing heat treatment or specific MCrAlY alloy, but asserts that the APA cures the deficiencies of Antonelli and Antonelli et al. At page 4, lines 8-14, the Office Action states that:

> Because the turbine blades of both of Antonelli and Antonelli et al. would also desire the improved properties afforded by the alloy and heat treatment of the admitted prior art of the instant disclosure, motivation to employ the MCrAlY alloy and heat treatment of the admitted prior art of the instant disclosure as the alloy and heat treatment of either of Antonelli and Antonelli et al. in order to restore the serviced coatings of either of Antonelli or Antonelli et al. would have been modifications obvious to one of ordinary skill in the art at the time the invention was made. (Emphasis added).

Applicants respectfully disagree with these assertions.

The attached Declaration by Alexander Schnell Under 37 C.F.R. § 1.132 addresses the assertions set forth in the Office Action. As discussed at point (5) of the Declaration, in the gas turbine industry, the term "standard heat treatment" is commonly used by those skilled in the art with reference to heat treatments that are applied to specific superalloys. According to this usage in the gas turbine industry, the term "standard" means a heat treatment that is designed for a particular

superalloy composition. Such heat treatments are typically recommended by the superalloy supplier.

At explained at point (8) of the Declaration, there is, however, **no** "standard heat treatment" for (sprayed) MCrAlY coatings applied on blades and vanes of parent superalloy materials used in the hot gas path of turbines. The term "standard heat treatment" is not pertinent to the MCrAlY coatings applied to the parent superalloy material of such components.

As also discussed in the Declaration, the "standard heat treatment" described at page 5, line 20, and page 7, lines 6-7, respectively, of the present specification, is a standard heat treatment used for the parent superalloy material, on which a coating is applied. The described "standard heat treatment" does **not** pertain to a heat treatment that is applied to the coatings.

Moreover, as discussed at point (10) of the Declaration, with regard to information backflow and performance of an ex-service component, subjecting an ex-service component to a heat treatment would cause the information that is stored in the component's microstructure to become distorted and thus detrimentally affect measurements taken after the heat treatment. Accordingly, one skilled in the art would not have expected that subjecting an ex-service component to a heat treatment as recited in claim 1, clause (c), would provide the advantages resulting from the claimed heat treatment.

As discussed at point (11) of the Declaration, the present inventors determined that in order to be able to properly apply the FSECT technique to a γ/γ' MCrAlY-coated component that has been used in a high temperature environment (i.e., to be able to apply the FSECT technique to obtain a reliable assessment of the

ex-service γ/γ′ MCrAlY coating), the component needs to be heat treated according to the step recited in claim 1, clause (c). It was unexpectedly determined that subjecting an ex-service γ/γ′ MCrAlY-coated component to the claimed heat treatment provides a solution to the above-discussed problems associated with the FSECT technique.

As explained at point (12) of the Declaration, the defined annealing heat treatment recited in claim 1, clause (c), is different from the "standard heat treatment" described in the present specification. The claimed heat treatment is performed on ex-service components for the purpose of determining information about the physical properties of the coating, and is performed to transform the non-equilibrium high temperature γ/γ′-microstructure into the equilibrium room temperature microstructure with a α-Cr phase **of the coating**. In stark contrast, a "standard heat treatment" is applied to a new part for the purpose of achieving a desired condition of the parent superalloy material that the specific "standard heat treatment" is designed for. As such, one having ordinary skill in the art would not have applied a "standard heat treatment" designed particularly for the parent superalloy material for the same purpose that the heat treatment recited in claim 1, clause (c), is applied to a non-equilibrium MCrAlY coating microstructure, i.e., to transform the non-equilibrium MCrAlY coating into an equilibrium microstructure **of the coating** so that the FSECT technique can be applied to obtain a reliable assessment of the γ/γ′ MCrAlY coating, and particularly the Al and/or Cr depletion of the coating from the measured values. Thus, the applied references do not support the alleged *prima facie* obviousness of the method recited in claim 1.

Claims 2-13, which depend from claim 1, are also patentable. Therefore, withdrawal of the rejection is respectfully requested.

Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. If there are any questions concerning this reply, to expedite prosecution, the undersigned can be reached at the number given below.

Respectfully submitted,

BUCHANAN INGERSOLL PC (INCLUDING ATTORNEYS FROM BURNS DOANE SWECKER & MATHIS)

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